CALIFORNIA DIVISION OF MINES AND GEOLOGY
FAULT EVALUATION REPORT FER-199,
Supplement No. 1
AIRPORT LAKE FAULT, COSO HOT SPRINGS SEGMENT, INYO COUNTY

by

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March 23, 1989

INTRODUCTION

Many faults north and east of the area covered by FER-199 were not evaluated due to their remote location and lack of time. One of these faults is probably the best-known segment of the Airport Lake fault zone. This Coso Hot Springs segment of that fault is continuous with previously evaluated faults on the Volcano Peak quadrangle and passes through the abandoned resort at Coso Hot Springs. Time has now become available to evaluate this segment of the fault, although many additional faults to the east are not being evaluated. These other faults are predominantly normal faults in Pliocene basalt and are in a very remote area. Any other recently active faults which may exist to the west also are not evaluated here. The Coso Hot Springs segment is accessible by dirt road although access is restricted on the China Lake Naval Weapons Center. Geothermal development is occurring nearby and the indians of Owens Valley use the hot springs as a religious site.

REVIEW OF PREVIOUS WORK

As previously described in FER-199, Roquemore (1981) and Duffield and Bacon (1981) have mapped the Airport Lake fault zone. In addition, Stinson (1977), has mapped the Haiwee Reservoir 15' quadrangle, which includes the Coso Hot Springs area. These three maps are surprisingly dissimilar (Figure 3). Even at Coso Hot Springs, where scarps are best developed, Stinson (1977) shows a single, straight fault; Duffield and Bacon (1981) show a set of 3 right-stepping en echelon faults; and Roquemore (1981) shows a single curved trace with minor branches at the north end. Both Stinson (1977) and Duffield and Bacon (1981) show faults offsetting younger alluvium, older alluvium, Pleistocene basalt and Mesozoic granitic rocks. Stinson (1977) considers the younger alluvium to be of Holocene age; Duffield and Bacon classify it as late Quaternary. Roquemore (1981) mapped only "active" (late Quaternary, Roquemore p.c. 1988) faults but shows many more faults then either Stinson or Duffield and Bacon.

SEISMICITY

Seismicity of the northern Coso Range area is shown in figure 2. Only well located (A and B quality) epicenters are shown. Epicenters for the period 1969 to 1985 are depicted based on data

from the California Institute of Technology (1985). Clusters of earthquakes throughout the Coso Range may be related to hydrothermal activity and volcanism. Two of these clusters occur along the trend of the Airport Lake fault zone north and south of Coso Hot Springs. These clusters may be related to activity along the fault zone.

INTERPRETATION OF AERIAL PHOTOGRAPHS AND FIELD CHECKING

Geomorphic evidence of Holocene faulting was interpreted using 1:30,000 scale aerial photographs taken by the USGS in 1976. The fault at Coso Hot Springs was visited briefly on a GSA Cordilleran Section field trip led by Wendell Duffield and Glenn Roquemore in 1988 (Duffield and Roquemore, 1988). This fault is expressed as a sharp 20 to 30° scarp in alluvium. The sharpness of the scarp would indicate a Holocene age but age estimates are uncertain because of cementation of the alluvium near the springs and the possibility of the scarp being steepened by spring sapping.

Scarps in younger alluvium and older alluvium follow the west side of the Coso Basin in the Coso Hot Springs area (Figure 4). They tend to be arcuate and show down-to-the-east normal displacement. These faults generally follow faults mapped by Roquemore (1981). Most of Roquemore's other faults do not appear to be Holocene. Holocene faults generally follow the margin of the Coso Basin. No evidence for right-lateral displacement was observed with the possible exception of the weak left-stepping pattern south of Coso Hot Springs (locality 1, Figure 4).

CONCLUSIONS

The Coso Hot Springs segment of the Airport Lake fault zone is a continuation of the normal faults recommended for zoning on the Volcano Peak quadrangle to the south. At Coso Hot Springs it is well defined and probably Holocene. To the north and south it is locally discontinuous but scarps in younger alluvium and older alluvium form a well defined a zone along the west side of the Coso Basin.

RECOMMENDATIONS

Zone for special studies those faults shown highlighted in yellow on Figure 4. References for the Cactus Peak quadrangle should be Roquemore (1981), Duffield and Bacon (1981) and Wills (this report).

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Review's recommendations approved.
Earl W. Hart
3/31/89

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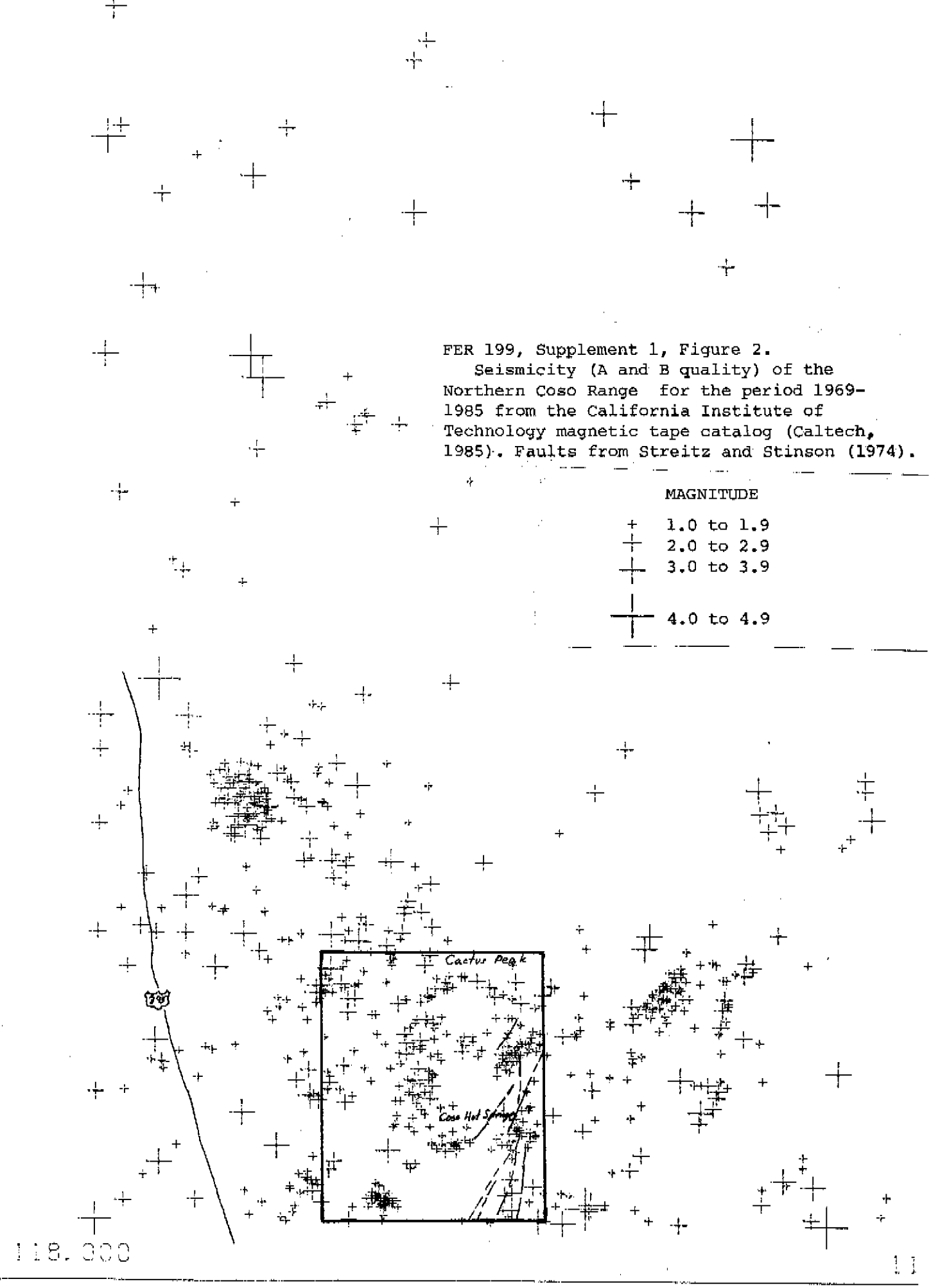

FER 199, Supplement 1, Figure 2.
Seismicity (A and B quality) of the Northern Coso Range for the period 1969-1985 from the California Institute of Technology magnetic tape catalog (Caltech, 1985). Faults from Streitz and Stinson (1974).